

CLAIMS

What is claimed is:

1. A fusing device for an electrophotographic image forming apparatus, the device comprising:
 - a heating pipe, both ends of which are sealed and in which a predetermined amount of a working fluid is contained, wherein the working fluid is supercooled at room temperature, and crystallizing and producing heat when acted on by a mechanical force;
 - a cylindrical roller which surrounds the heat pipe;
 - a heating element which is installed between the cylindrical roller and the heating pipe;
 - at least one mechanical unit which applies the mechanical force to the heating pipe and crystallizes the supercooled working fluid; and
 - a pressing roller which closely adheres to the fusing roller.
2. The device of claim 1, wherein the working fluid is a sodium acetate solvent.
3. The device of claim 2, wherein the sodium acetate solvent has a volume ratio of 50-65% with respect to the volume of the heating pipe.
4. The device of claim 2, wherein the ratio of sodium acetate to water in the sodium acetate solvent is 100-150% by weight.
5. The device of claim 1, further comprising a cooling fan which supercools the working fluid.
6. The device of claim 1, wherein the mechanical unit is attached to one end side of the heating pipe.
7. The device of claim 6, wherein the mechanical unit is a vibrator.
8. The device of claim 7, wherein the vibrator includes a timer which operates the vibrator for several seconds only during cold-start.

9. The device of claim 7, wherein the vibrator includes a motor, and the motor and the heating element are connected in parallel to an external power supply.

10. The device of claim 9, wherein one terminal of the motor is connected to one end side of the heat pipe, and the remaining side of the heat pipe and the remaining terminal of the motor are each connected to the external power supply.